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Victorian Entomologist

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News Bulletin of

The Entomological Society of Victoria inc.

THE ENTOMOLOGICAL SOCIETY OF VICTORIA (Inc)
MEMBERSHIP

Any person with an interest in entomology shall be eligible for Ordinary membership. Members of the Society include professional, amateur and student entomologists, all of whom receive the Society's News Bulletin, the Victorian Entomologist.

OBJECTIVES

The aims of the Society are:

(a) to stimulate the scientific study and discussion of all aspects of entomology,
(b) to gather, disseminate and record knowledge of all identifiable Australian insect species,
(c) to compile a comprehensive list of all Victorian insect species,
(d) to bring together in a congenial but scientific atmosphere all persons interested in entomology.

MEETINGS

The Society's meetings are held at Clunies Ross House, National Science Centre, 191 Royal Parade, Parkville, Victoria, at 8 p.m. on the third Friday of even months, with the possible exception of the December meeting which may be held earlier. Lectures by guest speakers or members are a feature of many meetings at which there is ample opportunity for informal discussion between members with similar interests. Forums are also conducted by members on their own particular interest so that others may participate in discussions.

SUBSCRIPTIONS

Ordinary Member	$20.00
Country Member	$16.00 (Over 100 km from GPO Melbourne)
Student Member	$12.00
Associate Member	$ 5.00 (No News Bulletin)

No additional fee is payable for overseas posting by surface mail of the news bulletin. Associate Members, resident at the same address as, and being immediate relatives of an ordinary Member, do not automatically receive the Society's publications but in all other respects rank as ordinary Members.

Cover Illustration by Jenny Browning, 1992
Ogyris sp (♀) from Lake Douglas, near Kalgoorlie, WA

MINUTES OF GENERAL MEETING, 16 OCTOBER 1992

The President, R. Field, opened the meeting at 8.06pm.

Present: J. Burns, P. Carwardine, K. Clark, M. & P. Coupar, D. Crosby, D. Dobrosak, I. Endersby, R. Field, E. Grey, V. Himmelreich, P. Kelly, M. Malipatil, M. Schutze, D. & N. Stewart, M. Stone, K. Walker, S. Watson, R. Vagi.

Apologies: A. & E. Farnworth, D. & J. Holmes, M. & B. Hunting, T. New, B. Vardy.

Minutes: Minutes of the August meeting (*Vic. Ent.* 22: 101-102) were received. (Kelly/Malipatil).

The President introduced the guest speaker for the evening, Dr. Alan Yen. The title of Alan's talk was "A Conservation Statement." Alan was awarded a grant to prepare an invertebrate conservation statement that, when combined with other statements on flora and fauna, will serve as a baseline study on the current status of conservation matters in Australia. He detailed the rationale employed in the study and spoke on a number of issues tackled in the statement. As the final submission date is not until April 1993, he invited comments up to this date. Much discussion followed Alan's talk and finally David Crosby proposed a vote of thanks to the speaker.

Correspondence: Detailed. Received (Kelly/Burns)

Treasurer's Report: Ian Endersby tabled his report inclusive to the 16 August 1992.

General Account	
SBV Bank Account	$2082
Le Souëf Award Account	
SBV Bank Account	$ 736
Term Deposit due 14.6.95	$1400
Total:	$2136
Junior Encouragement Fund	
SBV Bank Account	$ 491
Membership	
Country	63
Metropolitan	37
Student	4
Life	2
Associate	5
Subscribers	12

Received (Endersby/Crosby)

Editor's Report: Mali informed members that no articles were in hand for the following issue and requested members submit material. He also discussed

progress on gathering the member's interest to publish at a latter date.

Excursions: After some discussion, lead by Peter Carwardine, the meeting decided to cancel the excursion to the Grampians due to problems of obtaining accommodation and the pricing policy insisted upon over the long weekend period. Coupled with this were questions about the weather and accessibility as a number of tracks had been closed. It was decided to pool efforts into the Licola excursion in February 1993. Accommodation costs are $3/day.

General Business: 1. Nomination:

Allan Kellehear: Ordinary Membership
Nominated by: Ken Walker
Seconded by : Ross Field

In accordance with the Society rules, the election will be held over until the December meeting.

Election:
R. Faulder: Country Membership
Nominated by: I. Endersby
Seconded by: M. Hunting

There was a call for election hy a show of hands.

2. The President asked the meeting to vote on the proposed Honorary Life Membership for Mr. David Crosby which was carried unanimously. The President then presented a brief address summarising David's work with insects and the Entomological Society over many years. He commented on the pleasure it gave the Society to award David this honour.

Exhibits: 1. David Crosby showed a box of insects which included some of the first specimens he collected around 1942.

2. A copy of the recently published book "Flying Colours" by Mike and Pat Coupar was displayed.

3. Ken Clark provided photographs of early Victorian collectors, including 'Ras' Wilson and Alex Burns and spoke of the Entomological Society in those days. It was suggested the photographs be published in a future issue.

4. Mali Malipatil introduced Mr. Mark Schutze, a Grade 9 student who is a keen insect collector. Mark has recently spent time with Mali as well as examining the Burnley insect collection.

The President thanked the guest speaker again and members for their attendance. The meeting closed at 9-38pm.

MINUTES OF COUNCIL MEETING, 20 NOVEMBER 1992

The President, R. Field, opened the meeting at 8.09pm.

Present: D. Dobrosak, I. Endersby, R. Field, M. Hunting, K. Walker.

Apologies: P. Carwardine, M. Malipatil, T. New.

Minutes: Minutes of the September Council Meeting (*Vic. Ent.* 22(5): 103-104) were discussed. (Accepted Hunting/Endersby).

Correspondence: Detailed and received. (Hunting/Dobrosak)

Treasurer's Report: Financial Statement as of 20 November 1992 was received from I. Endersby as follows:

General Account	$1946
Le Souëf Award Account	$2136
Junior Encouragement Fund	$ 491

Membership:	
Country	63
Metro	36
Student	4
Life	3
Joint	5
Total	111

Subscribers	12

Ian Endersby presented a finance report for the year to date which showed a $28 surplus to the expected budget. He also tabled a proposed budget for 1993 which will enable close monitoring of the financial situation on a monthly basis.

Report accepted Endersby/Hunting.

Editor's Report: Through the Acting Secretary, Mali reported a shortage of articles for the next issue. Discussion ensued regarding charging for advertisement flyers.

Excursions: Through the Acting Secretary, Peter confirmed that members would receive the minimum accommodation rate for the Licola excursion. Accommodation for 36 is available and he suggested members encourage others, such as bird observers, to join the excursion.

General Business: (1). Committee reports.

There was much discussion of the three reports with the following results: Terms of reference and operating procedures were agreed upon for the Zoo LeSouëf Memorial Award. A motion proposed and seconded by Dobrosak and Endersby respectively: "That Council accepts and publishes the revised

Operating Procedures and Terms of Reference for the Zoo LeSouëf Memorial Award" was passed unanimously. It was decided to rewrite the Conservation and ENTRECS reports in a similar format to the Zoo LeSouëf Memorial Award report and finalise discussion on these reports at the following Council meeting.

(2). Zoo LeSouëf Memorial Award.
The President advised Council that the Zoo LeSouëf Memorial Award committee had convened and its unanimous decision was to recommend Mr. Peter Kelly for the 1992 award. Council accepted this recommendation.

(3). Zoo LeSouëf Award funding.
Ian Endershy tabled a proposed statement on future funding of the Zoo LeSouëf Award and proposed (seconded by M. Hunting) the following motion: "That $500 be transferred from the at-call account to a term deposit with the Commonwealth Bank" passed unanimously.

The meeting closed at 9.50pm.

HONORARY LIFE MEMBERSHIP TO DAVID CROSBY

The October meeting elected David Crosby as an Honorary Life Member of the Society. David has made a significant contribution to the study of Australian butterflies over a 50 year period. His immaculate collection now resides in the ANIC, his contribution to Australian entomology being acknowledged when an ANIC display paid tribute to David and other amateur entomologists during the 1990 Australian Entomological Society Conference in Canberra. His published taxonomic studies include the description of the Eltham copper, *Paralucia pyrodiscus lucida*. In recent years David's concentration on the study of Victorian butterflies has resulted in a number of consultancies on endangered species, and the surveying of National Parks, particularly in Gippsland, where he now spends much of his time. David played a major role in the establishment of the butterfly house at the Melbourne Zoological Gardens. The resounding success of this project has undoubtedly resulted in the general public having a greater appreciation of butterflies. David, over the last 20 years, has occupied almost every office in the Society and has been a major contributor to the Society's journal and a number of subcommittees, including the ENTREC, Conservation and Zoo LeSouef Memorial Award subcommittees. Congratulations David on your well deserved honorary life membership of the Society.

Ross Field

ZOO LE SOUEF MEMORIAL AWARD

Background

The purpose of the Award is to recognise the very substantial role played by amateurs in the development of knowledge of our insect fauna, this is to be interpreted in the broadest sense.

The Award is to be made for contributions to entomology by amateurs in Australia. Such contributions may comprise published papers and notes, broadcasts, newspaper articles, talks to Societies and/or amateur groups, or may be less tangible, such as a substantial record of help to others or public relations involving entomology.

No more than one award shall be made in each calendar year. Nominations may be made at any time, by any individual or group of people, and should be submitted to the Secretary of the Society, by 30 September. Nominations received after the closing may have to be deferred until the following year.

A nomination will remain current for three successive calendar years or annual meetings of the Council, unless an award is made to that nominee, and additional information may be provided to supplement the nomination at any time during this period. Such shall not be considered to constitute a new application. After three years, a candidate may be nominated afresh. No person may receive the award more than once in a ten year period.

Content of the Nomination

A nomination shall give the Committee sufficient information to assess the nominee's worthiness for receipt of the Award. It should include:

a) The name and full postal address of both nominee and nominator.

b) A clear statement of the grounds on which the nomination is being made. This should include (i) the period over which the contribution has been made (ii) the details of the contribution, lists of publications (etc.) (iii) comments on allied activities such as involvement in naturalist or conservationist groups and help to other entomologists, collections made (etc) and (iv) a declaration that these activities have been taken in an amateur capacity. Copies of publications (on loan) could be useful.

c) A brief resume/curriculum vitae of the candidate.

d) The names, contact addresses and telephone numbers of at least two (2) referees **not** involved in the nomination.

Zoo Le Souef Award Committee

The Committee will consist of the President, Secretary and Immediate Past President.

No Committee member can be involved in a nomination or be nominated for the Award unless resigning from the Committee.

In the event of a Committee member being unable to review nominations, the remaining members of the Committee can co-opt an additional member providing the co-opted member is a member of the Society and is not involved in nominating or being nominated for the Award. A minimum of two Committee members must be involved in any recommendation to Council.

Terms of Reference of Committee

1. To review the contents of documentation supporting nominations.

2. To recommend to Council if an award is to made and where appropriate, the name of the nominee to receive the award.

Operating Procedures of the Committee

The Secretary will acknowledge the receipt of nominations and circulate it to members of the Committee.

The Committee will keep the names of nominees confidential.

The Committee can seek additional information from referees and/or other sources to help judge a nominee.

It is expected that the Committee will normally have reviewed applications by the November Council Meeting (3rd Friday) of each year and would be able to make their recommendations to that Council Meeting.

The Secretary will notify all nominators of the outcome of Council's decision after the announcement of the decision at the next General Meeting (normally December).

COURTSHIP BEHAVIOR IN *TOXIDIA PERON* (LEPIDOPTERA: HESPERIIDAE)

K.L. Dunn
Australian Environmental Studies, Griffith University, Nathan, Qld 4111

Observations

At 4:20 pm EST on 17 October 1992 at Eagleby, Queensland, I observed a small skipper butterfly land and remain settled with wings fully closed on a dry leaf lying on the ground in full afternoon sunshine. The skipper had settled near a red flowering bottlebrush, *Callistemon* sp., in the vicinity of which, it had been active only minutes before. The bottlebrush flowering period was almost over with only few fresh examples remaining.

Indifferently, I noted the skipper to be a male of *Toxidia peron* (Latreille), a rather unattractive, but common and widespread insect in eastern Australia. On previous days I had observed that the bottlebrush sometimes attracted skippers in the late afternoon and the male perhaps exploiting this foraging site established his territory near the bush.

At that moment a second skipper of about equal size appeared in the air about one metre in front of the male and a similar distance above ground. Instantly the male took off from the leaf litter and darted up to the rear of the intruder; a female. The male dropped below the female to about 10 cm and flew up to within 5 cm of the front of her and then dropped behind once again to her posterior end whilst the female hovered slowly forward with a slow fluttering flight mimicked also by the male at this time. This behaviour was quickly repeated three times and the female then darted to the ground and landed with wings closed very close to where the male had formerly been settled (Figures A & B). The male then landed about 2 cm behind the female, but about 1 cm to the left side. The female rapidly fanned her wings for about 1 second without opening them more than about 2-3 mm and the male immediately flew off at about 180 degrees and was not seen again. The female fanned once again but the male was at this stage several metres distant and no longer observing her behaviour. The unreceptive female *T. peron* then remained settled and was easily approached and examined. Her condition was rather worn with considerable damage to the hindwings.

Weather conditions at the time of the observations were fine and sunny with a temperature of 27°C. A north-easterly breeze was present although not directly affecting the sheltered and partly shaded lawn area where the observations took place. The whole scenario was completed within about 15 seconds.

Discussion

For the purpose of mating, many insects select topographical features such as hill tops, tree tops or similar landmarks. Some select emergence and oviposition sites, and many others favour foraging sites especially those near flowering plants (Thornhill & Alcock 1983). All of these sites are applicable to butterflies. In the case of the male *T. peron*, a foraging area was selected, but other sites could also be utilised by the species.

The female *T. peron* was old and had probably mated previously. Settling of the female with wings closed is a known coital refusal (Common & Waterhouse 1981) and the quick wing fanning may also have signified this as the male did not proceed to mate but instead departed immediately after observing this activity. Atkins (1988) suggested that the slow fluttering of the wings of the female both in flight and on the ground is a rejection signal to males. My observations confirm this. The fanning motion may disperse a pheromone which signifies her unreceptivity to the male. Males of *T. peron* do not engage in forced coitus as do the raping males of *Cressida cressida* (Papilionidae) and *Acraea andromacha* (Nymphalidae) (Orr 1988). The successful coitus was earlier documented by Atkins (1988) who noted a period of one minute between the male's initial investigation and the commencement of copulation.

Atkins (1988) reported a lack of courtship in this species but my observations support a simple and very brief courtship lasting up to 15 seconds in the case of a rejection. The thrice repeated flight by the male beneath her, from her posterior end to her anterior end whilst simultaneously fluttering his wings in a way not seen during normal territorial flight, was perhaps to disseminate an odour in the vicinity of the female antennae, probably from the androconial sex brand on the forewings above. The courtship flight path observed is, in some aspects, similar to that of *Papilio aegeus* and *Troides prianus richmondia* (Papilionidae) as recorded by Orr (1988). In some butterflies the male may dust the female antennae during flight (Silberglied 1984) but I did not observe any direct contact. The flight to her posterior may have initially been to reconfirm his own determination of her sex and species either visually or pheromonally. The female response to the male signals obviously initiates a set of standard behaviours which cause her to settle and, if receptive or after receiving supplementary signals, to commence coitus as observed by Atkins. In contrast to the female response, male butterflies never land but continue aerial 'dog' fights which can extend over a matter of seconds to a few minutes (Rutowski 1992). The repeated male arcing flight possibly continues until the female responds (in this case three times) and the rapid nature of the courtship is probably to ensure the female response occurs before another conspecific male arrives.

Perhaps female butterflies land mostly in response to the male's signals rather than to their own detection of the male's conspecificity. If so, this may explain the interspecific courting and hybridisation seen among some papilionid butterflies, especially birdwings. Hancock (1991) reported that when natural hybrid matings occur among *Troides* species, it is between worn males and freshly emerged females. Orr (1988) observed that freshly emerged females of the Richmond Birdwing (*T. p. richmondia*) make no effort at all to resist copulation but mating in older virgins occurs only after prolonged courtship. Recently emerged females appear sexually less discriminating than older virgins, and among congeners with similar courtship signals and general appearance, such eager females respond to the courting male which is expected to have made the correct species recognition. This speculative explanation does not explain the male birdwing's confusion but males of the pierid genus *Colias*, for example, will even copulate with paper dummies and so are obviously not very discerning. In contrast, males of some nymphalids require olfactory cues before proceeding with copulation (Silberglied 1984).

The courtship behaviours of *C. cressida*, *T.p. richmondia*, *P. aegeus*, *Danaus affinis*, *A. andromacha* and *Delias nigrina* were studied recently by Orr (1988) and that of *Hypolimnas bolina* by Rutowski (1992). Earlier, Hardy (1951) described the courtship of *Euploea core*.

Figure A
Male flight relative to female if the female remained stationary

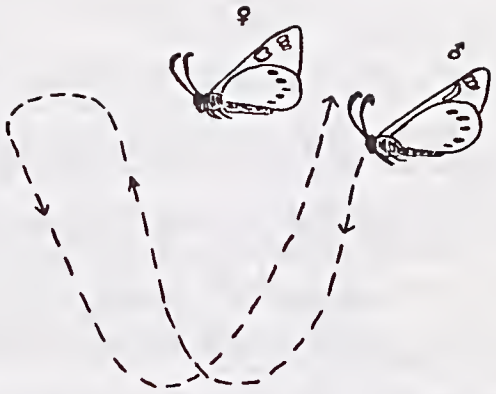

Figure B
Actual flight paths of both sexes relative to each other and the ground

Atkins (1984) gave a brief account for *Acrodipsas cuprea* and McCubbin (1971) documented *Junonia villida* and *Pieris rapae*. Common & Waterhouse (1981) summarised this behaviour in *P. rapae* and *Hypolimnas misippus* beyond Australia. The sexual cues and behaviour of Australian *Toxidia* species, however, have not been investigated in detail, and our general biological knowledge of even our more common hesperiids remains poorly documented.

Acknowledgments

Prof. R. Kitching (Griffith University) and I. Faithfull (Institute of Plant Sciences) kindly commented on this communication.

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THE ENTOMOLOGICAL SOCIETY OF VICTORIA (INC)
FINANCIAL MEMBERS AND THEIR INTERESTS

Mr Sam Aquilina, CUDLEE CREEK P O, SA 5233. *Lepidoptera.*
Mr David C. Archibald, 8 Hoy Street, BENDIGO VIC 3550.
Mr Andrew Atkins, 45 Caldwell Ave, DUDLEY NSW 2290. *Lepidoptera, particularly Hesperiidae; fossil butterflies.*
Mr R. Bashford, Forestry Commission, G P O Box 207B, HOBART TAS 7001. *Forest entomology; Coleoptera (Lucanidae & Carabidae); bio-control.*
Dr Peter Bedford, 50 Castle Street, EAGLEMONT VIC 3084. *General; Lepidoptera.*
Dr Gordon Berg, 6 Venice Street, BOX HILL SOUTH VIC 3128. *Pasture entomology; butterflies.*
Mr Michael Braby, Zoology Dept, James Cook University, TOWNSVILLE QLD 4811. *Bio-ecology, taxonomy and conservation of satyrine Lycaenidae; taxonomy of Geometridae.*
Mr Gary Burns, 36 Redwood Road, KINGSTON TAS 7050. *Tasmanian Buprestidae.*
Mrs Joy Burns, 3 Inglis Street, MORNINGTON VIC 3931. *Buprestidae.*
Mr Rodney Burns, 159 Domain Road, SOUTH YARRA VIC 3141. *Butterflies.*
Mr Peter Carwardine, 2A Victoria Road, MALVERN VIC 3144. *General.*
Mr C.E. Chadwick, 9/2 Francis Road, ARTARMON NSW 2064. *Entomology in New South Wales.*
Mr Ken Clark, 42 Bronhill Road, RINGWOOD EAST VIC 3135. *Butterflies; Hymenoptera.*
Messrs Robert & Steven Condron, 96 Shannon Street, BOX HILL NORTH VIC 3129. *Lepidoptera; general.*
Mr R.P. Cook, 2 Warwick Street, LARGS NORTH SA 5016. *Taxonomy & bio-control, particularly spiders, ladybirds & lacewings.*
Mr Gerald Cope, 44 Russell Avenue, FAULCONBRIDGE NSW 2776. *Lepidoptera.*
Mr Mike & Mrs Pat Coupar, 143 Brackenbury Street, WARRANDYTE VIC 3113. *Lepidoptera photography.*
Mr David Crosby, 74 Gipps Street, EAST MELBOURNE VIC 3002. *Butterflies, especially distribution, conservation & ecology.*
Mr John D'Apice, 1802/187 Liverpool Street, SYDNEY NSW 2000. *Butterflies.*
Mr Greg Daniels, Entomology, University of Queensland, ST LUCIA QLD 4067. *Lepidoptera; Diptera.*
Mr Daniel Dobrosak, 66 Wiltonvale Avenue, HOPPERS CROSSING VIC 3029. *Lepidoptera.*
Mr Fabian Douglas, Lot 88 Morrison Avenue, WOMBARRA NSW 2515. *Lepidoptera; Coleoptera.*
Mr Kelvyn Dunn, 6/13 Albert Street, EAGLEBY QLD 4207. *Australian butterflies & cicadas.*
Mr Rod Eastwood, 50 Breakwater Terrace, REDLAND BAY QLD 4165. *Australian Lepidoptera.*
Mr E.D. Edwards, CSIRO Div of Entomology, P O Box 1700, CANBERRA ACT 2601. *Lepidoptera.*
Mr Ian Endersby, 56 Looker Road, MONTMORENCY VIC 3094. *Insect behaviour; photography; Odonata.*
Mr Ian Faithfull, 7/20 Adam Street, RICHMOND VIC 3121. *Coleoptera (Scarabaeidae, etc.); Ichneumonidae; Lepidoptera; general.*
Mr M.A. Faithfull, 10 Alsace Street, BRUNSWICK EAST VIC 3057. *General; botany; habitat restoration.*
Mr W.J. & Mrs A.R. Faithfull, R M B 3263, MANSFIELD VIC 3722. *General.*
Dr Arthur & Enid Furnworth, 47 The Boulevarde, DONCASTER VIC 3108. *General; photography.*

Dr G. Farrell, CSIRO Div of Entomology, P M B 44, WINNELLIE NT 0821. *Insect-plant ecology; bio-control of weeds; Coccoidea.*
Mr Richard J. Faulder, P O Box 136, YANCO NSW 2703. *Arachnology; agricultural entomology.*
Dr Ross P. Field, 51 Sandells Road, TECOMA VIC 3160. *Butterflies.*
Mr R.H. Fisher, 21 Seaview Road, LYNTON SA 5062. *Lepidoptera (Papilionoidea & Hesperioidea).*
Mr P.J. Fox, 5 Regency Avenue, PIALBA QLD 4655. *Lepidoptera.*
Mr I. Francombe, May Road, OFFICER VIC 3809.
Mr Bill Frost, 30 Aroha Terrace, BLACK FOREST SA 5035. *Buprestidae; Eriophyidae; grassland Acarology.*
Mr Peter Gillespie, Biol & Chem Res Inst, P M B 10, RYDALMERE NSW 2116. *Lepidoptera; Buprestidae.*
Ms Alena Glaister, P O Box 240, BELGRAVE VIC 3160. *Coleoptera (Elmidae); freshwater insects.*
Mr E.J. Grey, 8 Woona Court, YALLAMBIE VIC 3085. *Arachnids.*
Dr P.J. Gullan, Botany & Zoology, A.N.U., G P O Box 4, CANBERRA ACT 2601. *Coccoidea; general entomology, particularly systematics & biogeography.*
Mr Jack Hasenpusch, P O Box 26, INNISFAIL QLD 4860. *Lepidoptera; Coleoptera (Lucanidae & Cetoniinae); Phasmatodea.*
Mr Keith Hately, R M B 382, NHILL VIC 3418. *Buprestidae; Lepidoptera.*
Mr Trevor Hawkeswood, c/o North Star Caravan Resort, Coast Rd, HASTINGS POINT NSW 2489. *Coleoptera; Lepidoptera.*
Mr Lionel Hill, P O Box 303, DEVONPORT TAS 7310. *Agricultural & forest entomology; Hemiptera; soil & litter arthropods.*
Ms Val Hlmmelreich, 27 Glenvalley Cres, SEVILLE EAST VIC 3139. *Natural history.*
Mr David Holmes, 5 Overbay Avenue, DROMANA VIC 3936. *World Lepidoptera, especially S.E. Asia and Australia.*
Mr P. Honan, 7 Wayne Avenue, BORONIA VIC 3155. *Photography.*
Dr R. Hornabrook, 27 Orchard Street, Wadestown, WELLINGTON NEW ZEALAND. *Coleoptera, particularly Cleridae; Butterflies.*
Mr Mark Hunting, 49 Menzies Drive, SUNBURY VIC 3429. *Butterflies.*
Mr A.H. Hyman, 22 Tantallon Road, LANE COVE NSW 2066. *Collection of butterflies and diurnal moths.*
Mr Peter Karargiris, 4 Tokay Crescent, MORPHETT VALE SA 5162. *Coleoptera.*
Mr J.C. Keast, 28 George Street, GREENWICH NSW 2065. *Moths.*
Dr Allan Kellehear, 2 Alexander Street, BOX HILL VIC 3128. *Butterflies; beetles.*
Mr Peter Kelly, 16 Roberts Street, BRUNSWICK EAST VIC 3057. *Chrysomelidae.*
Prof J. Kerr, 29 Hipwood Road, HAMILTON QLD 4007. *Lepidoptera.*
Mr David F. King, 8 Traum Street, PORTARLINGTON VIC 3223. *Arachnids.*
Mr D.R. Kitchin, 21 Alderley Street, TOOWOOMBA QLD 4350. *Butterflies; Coleoptera (Cetoniinae).*
Mr Graeme Krake, 18 Nymph Street, MITCHAM VIC 3132. *Coleoptera (Buprestidae, Carabidae, Scarabaeidae, Trogidae, etc).*
Mr T.A. Lambkin, 96 Dandenong Road, JAMBOREE HEIGHTS QLD 4074. *Butterflies of Queensland; Cicadidae.*
Mr S. Lamond, P O Box 446, WAHROONGA NSW 2076. *Lepidoptera; Coleoptera.*
Mr David A. Lane, 3 Janda Street, ATHERTON QLD 4883. *Australian Lepidoptera.*
Mr Steve Langley, 794 Barenjoey Road, PALM BEACH NSW 2108. *Coleoptera; Lepidoptera.*
Mr A. Leavesley, 7 Cabarita Crescent, TOOWOOMBA QLD 4350.
Mr G.R. Lee, 22 Periwinkle Way, LYNWOOD WA 6155.

Mrs Mary LeSouef, Eastbourne Grange (Room 18), 1 Wyuna St, ROSEBUD VIC 3939. *General.*

Dr Mali Malipatil, Institute of Plant Sciences, Department of Agriculture, Swan St, BURNLEY VIC 3121. *Hemiptera; taxonomy & biology of economic insects in general.*

Mr Ray Manskie, 139 Queen Street, MARYBOROUGH QLD 4650. *Lepidoptera (Lycaenidae).*

Mr G. Milledge, Museum of Victoria, 71 Victoria Cres, ABBOTSFORD VIC 3067. *Mantodea; Arachnida.*

Dr Geoff B. Monteith, Queensland Museum, P O Box 3300, SOUTH BRISBANE 4101. *Coleoptera; Hemiptera; soil & litter arthropods; biology (general).*

Mr M.D. Moore, P O Box 674, WAIKERIE SA 5330. *Butterflies.*

Mr D.E.A. Morton, 32 Chatsworth Road, PRAHRAN VIC 3181. *Lepidoptera (Hesperiidae & Lycaenidae).*

Mr Max Moulds, 16 Park Avenue, WAITARA NSW 2077. *Taxonomy & biology of Lepidoptera (Sphingidae); Cicadidae.*

Mr Chris Muller, P O Box 228, DURAL NSW 2158. *Lepidoptera (butterflies & Sphingidae); Coleoptera.*

Dr Tim R. New, Department of Zoology, La Trobe University, BUNDOORA VIC 3083. *Neuroptera; Psocoptera; ecology; conservation.*

Dr Ebbe S. Nielsen, CSIRO Entomology, G P O Box 1700, CANBERRA ACT 2601. *Lepidoptera.*

Mr P.A. O'Carroll, "Northgate", Mount Tomah, via BILPIN NSW 2758. *Aquatic insects, especially behaviour patterns.*

Mr J.D. O'Dea, 102 Bandjalong Crescent, ARANDA ACT 2614. *Insect behaviour & senses.*

Mr G. O'Reilly, 14 Virginia Place, WEST PENNANT HILLS NSW 2125. *Coleoptera (Curculionidae, Pselaphidae); Microlepidoptera.*

Dr A.B. Owen, Parkville Adolescent Unit, Private Bag No 8, PARKVILLE VIC 3052. *Butterflies.*

Mr E. Petrie, P O Box 719, LANE COVE NSW 2066. *Butterflies & larger moths; Buprestidae; Cicadidae.*

Mr M.I. Pickett, P O Box 183, LOBETHAL SA 5241. *Lepidoptera.*

Mr Mike Puccetti, c/o State School, DOOMADGEE via MT ISA QLD 4825. *Butterflies.*

Mr Deniss M. Reeves, 10 Janet Court, CAPALABA QLD 4157. *Odonata; Lepidoptera.*

Mr John Reid, 3 Barnie Road, HEATHMONT VIC 3135. *Natural history; environmental education.*

Mr Otto Rogge, 38 Munroe Street, KEW EAST VIC 3102. *Wasps; insect photography.*

Ms Jennifer Ross, Dept of Molecular Biology, Vanderbolt University, Nashville, TENNESSEE 37235 USA. *Drosophila; close-up photography; general entomology.*

Mr Mark Schutze, 12 Anderson Court, WANTIRNA SOUTH VIC 3152. *General entomology; spiders.*

Mr Stephen K. Smith, 3 Avocet Court, WERRIBEE VIC 3030. *Coleoptera.*

Dr C.N. Smithers, Entomology Dept, Australian Museum, College Street, SYDNEY SOUTH NSW 2000. *Psocoptera; Mecoptera; Neuropiera; insect migration; general entomology.*

Mr D. & Mrs N. Stewart, P O Box 67, ROSEBUD WEST VIC 3940. *General entomology.*

Mr Allen Sundholm, 45/80 Elizabeth Bay Road, ELIZABETH BAY NSW 2011. *Buprestidae; Lepidoptera (Australian & overseas); macrophotography.*

Mr Jim Turner, 117 Derby Street, PENRITH NSW 2750. *Buprestidae; Lepidoptera; watercolour painting (Australian fauna).*

Mr Stephen Underwood, c/o Australasian Butterfly Co., P O Box 330, LANE COVE NSW 2066. *Lepidoptera; Coleoptera; wildlife photography; insect macrophotography.*

Mr Ray Vagi, 5/15 Nunan Place, RESERVOIR VIC 3073. *Butterflies; beetles.*

Mr Peter Valentine, Geography Dept, James Cook University, TOWNSVILLE QLD 4811. *Butterflies; conservation; tropical ecology.*
Mr Beresford H. Vardy, P O Box 1055, BENDIGO VIC 3550. *Butterflies.*
Mr John Walner, 6/150 Hyde Street, YARRAVILLE VIC 3013. *Taxonomy & ecology of beetles.*
Mr Ken Walker, Museum of Victoria, 71 Victoria Cres., ABBOTSFORD VIC 3067. *Native bees & wasps.*
Dr Matthew Williams, Dept Cons. & Land Management, 50 Hayman Rd, COMO WA 6152. *Conservation; butterflies; cicadas.*
Dr Peter Williams, 72 Summerhill Road, GLEN IRIS VIC 3146. *Stored products & pasture entomology; Coleoptera; Lepidoptera.*
Mr Terry Woodger, c/o Bohle P O, TOWNSVILLE QLD 4818. *Butterflies; grasshoppers.*
Mr Graham Wurtz, 56 Magrath Crescent, SPENCE ACT 2615. *Butterflies.*
Dr David Yeates, Tregeagle Road, TREGEAGLE NSW 2480. *Entomology; systematics.*
Dr Alan Yen, Museum of Victoria, 71 Victoria Crescent, ABBOTSFORD VIC 3067. *Insect ecology; conservation; psyllids.*
Mr C. van Dijk, c/o Post Office, AUBURN SA 5451. *Coleoptera; Hemiptera; Botany.*

Members, please notify any alterations or additions to the above list to the Society's Secretary

A NOTE ON *DICRANOLAIUS* SP. (COLEOPTERA: MELYRIDAE: MALACHIINAE)

Peter Karargiris
4 Tokay Crescent, Morphett Vale, SA 5162

According to Matthews (1992) and Moore (1990), melyrid beetles of the genus *Dicranolaius* are commonly found on plants and flowers. Matthews states that these beetles are predatory in both the adult and larval stages and also that in one species, *Dicranolaius villosus* Lea, the larvae are known to feed on locust eggs. Moore however states that adult *Dicranolaius* feed on pollen.

While I have collected *Dicranolaius* from plants, I have also found two adult males in carrion on a beach.

On April 27th 1990 I collected the two beetles from a bag of rotting cockles on the beach at First Valley, south of Adelaide. I have only recently been able to identify the beetles with any certainty, as being *Dicranolaius*. Both individuals measured 4mm in length and were quite active, one taking to the wing and flying a short distance. The plastic bag, containing 15-20 cockles was filled with a considerable amount of sand but the contents were quite dry, being out of reach of the tide. From the strong smell of putrefaction emanating out of the bag, it was obvious that the cockles had been on the beach for a considerable time.

More predictably, the melyrids shared the bag with six rove beetles (Staphylinidae : Aleocharinae) and seven plump maggots (Diptera). I examined the contents of the bag as carefully as I could but found no other insects present.

I am aware of no other instances of *Dicranolaius* or indeed any Melyridae being associated with carrion or beaches, so I can suggest no reason for the beetles presence in the bag. It is possible that they were preying on the maggots or the staphylinids, although I could see no evidence of this, or else, feeding on the carrion itself.

References

Matthews, E.G. 1992. *A Guide to the Genera of Beetles of South Australia*. Part 6. South Australian Museum, Adelaide.

Moore, B.P. 1990. *Beetles of South-eastern Australia*. Fascicle 10. Australian Entomological Press, Geeenwich.

CONSERVATION OF AUSTRALIA'S NON-MARINE INVERTEBRATES: AN OVERVIEW

Alan L. Yen and Rhonda J. Butcher
Invertebrate Survey Dept, Museum of Victoria, 71 Victoria Cres., Ahhotsford, Vic 3067.

In 1991, Rhonda Butcher and myself undertook an overview on the conservation of Australian non-marine invertebrates. This project was funded hy the Endangered Species Unit of the Australian National Parks and Wildlife Service. A draft report has been completed, and the overview is currently in the process of rewriting for publication. In this talk tonight, I wish to highlight some of the major issues involved - I do not necessarily claim to know the answers, but aim to stimulate thought and dialogue about some of the important issues.

What are invertebrates?

In terms of number of species and numbers of individuals, invertehrates dominate the world's fauna. There could be as many as an estimated 10-30 million species of animals in the world, the vast majority of which are undescribed, and 99% of these are invertehrates. In Australia, there are some 2,500 species of non-marine vertebrates compared to the estimated 200,000-300,000 species of non-marine invertebrates.

Why conserve invertebrates?

People rarely ask why we need to conserve hirds and mammals, but invertehrate conservationists are continually called upon to justify why invertehrates need to be conserved.

The answer is very simple. Invertebrates can survive without human beings, hut invertehrates are crucial in a multitude of fundamental ecological functions without which human beings cannot survive. Invertebrates are crucial in practically all ecosystems, are associated with herbivory, decomposition (plant and animal), parasitism, predation, pollination, and numerous other ecological functions.

How do you conserve invertebrates?

The popular view is that because there are so many invertebrates (in terms of numhers of species and individuals), they, as a group, do not warrant any conservation concern. This is due partly to the small size of most invertebrates and a lack of recognition of invertehrate diversity leading to the belief that invertehrates are simply a "hunch of similar bugs" or "creepy-crawlies," and that all are dangerous to humans because they are plant pests, associated with disease, or are venomous. With such misunderstandings comprehensions about invertebrates, the question of how you conserve them provides an enormous challenge to all of us.

(1) The single species approach

The single species approach is the best known method of conserving any species. However, it is not a viable option for most vertebrate species, let alone for the myriad of invertebrate species. Besides the physical impossibility of funding and managing the totality of all invertebrate species, there is the simple problem of lack of information on majority of invertebrate species. It is important to note that the single species approach should not be ruled out for all invertebrates because of the publicity and scientific value derived from the conservation of selected "flagship" species.

(2) The community (species assemblage) approach

Instead of dealing with conserving a single species, another approach would be conserving defined species assemblages within a defined area. The species assemblage may comprise species from different higher taxa, or species representing one higher taxonomic unit (e.g. butterflies), or species utilising one habitat type (e.g. ground-dwelling beetles). While this may be more cost effective than single species conservation, information is still lacking to make this a widely applicable option at this stage.

(3) The habitat approach

Most conservationists would agree that habitat protection is the best way to conserve invertebrates. The theory is that if the habitat is adequately protected, then the invertebrates will look after themselves. There are several questions that this approach raises.

First, there is the question of how we define invertebrate habitat. On what scale do we define invertebrate habitat? For some species, an area of many square kilometres would be required, while for others, several square centimetres could ensure survival of the species. The next question is how one identifies invertebrate habitat: landform, river, stream bed, plant communities, the individual plant, the plant litter on the ground, the rock on the ground? Then there is the question of managing habitat for succession, both at the coarse level (succession in a plant community) and at the finer level (a rotting fallen log on the ground); for example, one of the burning issues in the ecology of Australian habitats is fire frequency and seasonality.

If habitat can be defined (which may be possible in many parts of Australia which are relatively "pristine"), it is important to note that habitat protection is not necessarily the same as locking up habitat in reserves. It is important to know what is being conserved, and determining appropriate management plans for successful conservation.

There is also the question of conserving invertebrates in disturbed habitats. Just how much effort will be required in conserving remnant habitat and how much effort should be put into restoring habitat needs much more information before decisions can be made.

(4) The maintenance of ecological processes

One of the arguments often put forward is that if essential ecological processes continue, then it does not matter what species are involved in the processes. This is a very dangerous approach because there is the great danger of losing our biological species richness, which in the long term, is our genetic insurance for future change. There is always the danger that important ecological processes will be controlled by aggressive, generalist species.

(5) The control of threatening processes

The simplest way to conserve invertebrates (and all other biota) is to control threatening processes. This is not so easy in reality because of practical economic and political considerations. It is not always possible to define a specific threatening process (if land is urbanised, is the threatening process vegetation clearance, soil disturbance, changed hydrology, or a complex interaction of all these processes?), and when does any specific activity actually become a threatening process (e.g. how much land clearance and how many houses need to be built to constitute urbanisation?)? Furthermore, there is very little information on the effects of threatening processes on invertebrates, partly because of the difficulty in defining the actual process.

However, at this stage in Australia's history, there are several processes that can be considered threatening processes that we can do something about. These include the clearance of native vegetation, the indiscriminant use of insecticides, blatant pollution, major landscape alterations, just to name a few.

One of the so-called threatening processes that is associated with invertebrates is that of collecting. Many administrators believe that collecting is the major threat to many invertebrates. There is no evidence for this, and while collecting controls may be required for a few species that have become threatened because of habitat deterioration, future collecting of invertebrates, in a selective manner, is essential if we are to even begin to fill in the gaps in our knowledge of Australian invertebrates.

The main areas that need consideration

Obviously priorities have to be set for invertebrate conservation. A multi-pronged approach is required in four broad areas: legislation, research, administration, and education.

(1) Legislation

There is little doubt that in Australia, State legislation is more relevant to nature conservation issues than Commonwealth legislation. In some States or Territories, invertebrates are not considered fauna or wildlife, resulting in little or no interest in invertebrate conservation by the relevant authorities. In States where invertebrates can be protected in some way, current legislation usually covers the taking of fauna but does not protect habitat. In some cases, there is legislation covers collecting of nominated, usually charismatic species, which in many cases, are not even threatened. While uniform endangered species legislation will assist threatened invertebrate species, legislation will probably play a minor aspect in invertebrate conservation.

The main exception in State legislation is the Victorian Flora and Fauna Guarantee Act, in which invertebrates are given the same status as any native vertebrate species if they are listed under the Act. The major achievement of the Act is that it has forced the State conservation authorities to take on invertebrate conservation as part of their charter, and also it has initiated more research on invertebrate conservation than would otherwise have occurred.

(2) Knowledge (research)

The information available about Australian invertebrates is still minimal. Many species remain undescribed, and even uncollected, and distributional and biological information about most species is lacking. There is a desperate need for more taxonomic research, but it is probably unrealistic to expect every species to be described. Priorities need to be determined as to which groups of invertebrates should research effort be aimed at.

There is strong support to use "indicator taxa" in research and monitoring. There is still some controversy on which groups of invertebrates are good indicators. It is likely that pragmatic definitions will be required in the near future about selecting some groups are indicators, but certainly more research is required on what invertebrates do indicate. It is unlikely that there will be any universal indicator groups for Australia, and we are most likely to use a range of different taxa within habitats in Australia. One important issue for any indicator groups is that they are practical and can be easily used by non-specialists.

There are three avenues that could be followed to improve our knowledge base:
(a) Get available information on invertebrates into accessible databases, whether it be in the literature, specimens in collections, or unpublished. There is a wealth of unpublished information (by students, researchers in government and tertiary institutions, private consultants, and amateurs), and the gathering of this information can prevent reworking previously worked areas;
(b) Increase the meagre information base currently available by stream-lining the system so that information is more readily accessible. For example, it is possible that if we wait for proper scientific descriptions of most of our invertebrate species, many of them will become extinct through habitat destruction. A system of standard reference voucher collections, possibly based at museums, would be essential; and
(c) Further research on invertebrates, looking at questions such as the value of using plant communities to conserve invertebrates, the significance of "indicator" groups, the effects of habitat fragmentation, etc.

The role of amateurs and students must not be underestimated. Much of the information about invertebrates comes from dedicated amateurs, and the input from this group needs to be expanded and encouraged. Tertiary students are one of the major collectors of information: undergraduate and postgraduate projects yield much material which is generally badly labelled, badly curated, and tossed into the sink. This is an area that needs urgent attention.

(3) Administration

In most State, Territory and even Commonwealth Government conservation departments, the majority of biologists employed have vertebrate or botanical training. The number of scientists or administrators whose job is to look after non-economic or non-medical invertebrates is meagre, and this role is often undertaken on a de facto basis by relevant invertebrate experts

at museums, universities, or among amateurs. An invertebrate policy person in each conservation agency could stimulate interest in invertebrate conservation by coordinating research, attracting funds, ensuring that Government programmes do take invertebrates into their stride, and acting as a liaison person with other invertebrate specialists.

(4) Education

Possibly the most important aspect in invertebrate conservation is the educational aspect. Many people have a feeling of revulsion for most invertebrates. Invertebrates are considered nuisances, dangerous, or pests. The situation is not helped by the media, film-makers, pulp writers, and scientists seeking research funds, who bombard the public with ideas that only perpetuate the misconceptions. The major message that needs to be got across is that the vast majority of invertebrates are harmless, are ecologically vital, and that their conservation is an important issue.

To overcome this barrier, education programmes need to be put into practice. Besides education at the school level, the public can be served by development of live invertebrate displays (or "Insect Zoos") that do not concentrate solely on beautiful butterflies or scary creepy crawlies. Both these certainly have their place in such displays, but the value of the common, everyday, mundane, invertebrates needs to be emphasised. There is the opportunity to make people more aware of their local environment by using invertebrates. Few people ever see threatened charismatic species such as pandas, rhinos or numbats in their natural habitats, so conservation may be an issue that can be seen that does not directly affect them. However, by developing an awareness of the native animals around them, a sense of environmental responsibility can be awakened, and what better group to use than invertebrates? - there are more of them for a start.

RESEARCH REQUEST

CASTNIIDAE - SUN MOTHS (LEPIDOPTERA)

During the next two years Ted Edwards, Ebbe Nielsen and Tracy Harwood of the Australian National Insect Collection, with support from CSIRO and the ABRS, will conduct a detailed study of the taxonomy, distribution and general biology of the Australian Castniidae (sun moths).

The purpose of the study is to produce the first thorough taxonomic revision of the *c.* 45 Australian species of Castniidae. The study will provide a user-friendly identification manual illustrated with colour plates, summary of their general biology and past and present distribution. The conservation status of each species will also be discussed : all species appear to feed on native grasses and sedges and many species seem to have declined because of pasture improvement and the use of agrochemicals.

Since Castniidae are day-flying and butterfly-like moths (see figure below), we appeal to butterfly collectors and other entomologists to assist our study with loans of specimens, information about sightings and biology, and by generally looking out for Castniidae during the next year collecting a short series representing both sexes, if possible. All specimens loaned to us will be returned with identification and all assistance with the project will be acknowledged in the final publication.

Please contact us by mail or telephone for more information.

Castniid Project
Mr Ted Edwards, CSIRO Entomology
GPO Box 1700, CANBERRA, ACT 2601
Tel: (06) 246 4257 Fax: (06) 246 4000

RECENT ARTICLES OF INTEREST

Compiled by Ian Faithfull, 7/20 Adam Street, Burnley, Vic., 3121.

Backhouse, M., 1991. **Of weevils and moths and 11 dead magpies.** *The Age* 6 Dec., p.5. In one week 11 dead magpies and 1 dead magpielark were found on the lawns of Parliament House, Canberra, and the Senate debated the affair. Autopsies suggested they died from eating black beetles (*Heteronychus*?) "lured to the surface by pesticides" sprayed at the beginning of the week to kill Argentine stem weevil (*Listronotus*). Senator Sihraa (ALP) "said the birds were probably attracted to the black beetles because of yet another Bogong moth invasion"(!). Sen.Reid (Liberal)called for a comprehensive report. Sen.Coulter (Democrat) stated that if the Commonwealth was more frugal with its water there would not be so many lawn pests or such a need for chemical sprays. Control chemical not mentioned (in order to prevent alarm?).

Sheppard, J., 1991. **Keep an eye on parasites.** *Weekly Times* 10 April, p.52. The bot flies of horses, *Gasterophilus* spp., veterinary aspects.

Phylloxera near Benalla. *The Age* 17 Dec.1991, p.15. Brown Bros.vineyard "near Benalla" quarantined due to outbreak of introduced phylloxera root gall aphids involving 100 plants. Browns decided to destroy 15,000 vines on 3 ha. to prevent spread.

MacLean, S., 1991. **Scientists criticise vineyard pest plan.** *The Age* 30 Dec., p.5. Destruction of the vines was not necessary say entomologists Ken Helm (ex CSIRO) and Les Readshaw (CSIRO). A better option was vine environmental stress management and gradual replanting with resistant stock. Reported as "near Milawa" (42 km from Benalla).

Tolra, L., 1992. **Boffins shed light on vines aphid.** *Weekly Times* 8 Jan., p.20. Greg Buchanan (Dept.Ag.Vic.) criticises Helm for oversimplification and argues the efficacy of controls adopted. High cost of resistant stock. Quarantine measures. Peter Brown explains the problems of env.stress mgt.for fine wine production, unavailability of resistant stock, etc. Vineyard reported to be at Whitlands (42 km from Benalla and 36 from Milawa) and outbreak "destroyed about 7 per cent of ... 168,000 vines..."

Wasp a weapon in potato battle. *Weekly Times* 18 Sept.1991, p.16. Paul Horne's work on control of potato moth, *Phthorimaea operculella*, with the wasp *Orgilus lepidus*, involving the use of irrigation and soil hilling to keep the tubers completely covered with soil and provide control more effective than pesticides. "One application of insecticide can make the problem worse, by not completely controlling the moths, but removing their natural enemy, the wasp". Inundative & inoculative releases of the wasp.

Bailey, W., 1990. **Acoustic Behaviour of Insects. An Evolutionary Perspective.** Chapman & Hall, 240 pp., 69 illus. hardback, $105.95. Acoustic strategies & aggregation, chorusing, sound production, mate recognition, sound localisation and distance perception, predator avoidance, etc.

Coupar, Pat & Coupar, Mike, 1992. **Flying Colours. Common Caterpillars, Butterflies and Moths of South-eastern Australia.** New South Wales University Press, Kensington. 255x192 mm, 128 pp.,$17.95. Superb colour plates of 67 moth larvae, 66 with adult and 23 butterflies and their larvae. Distribution, foodplants, descriptions of larvae, pupae and adults, new life history info.

(to be continued)

WEEKEND EXCURSION TO LICOLA

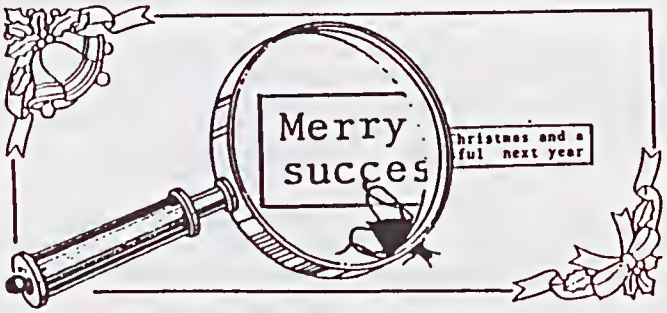
DATE: February 6 & 7 1993 with a possibility of including Friday and may be Sunday nights.
LOCATION: Melbourne Church of England Grammar School Camp, 20 Km North of Licola at junction of Wellington River and Breakfast Creek. Altitude 450 m.
DISTANCE: From Melbourne 270 km sealed roads. Travel via Princes Hwy, Rosedale, Heyfield, Licola.
ACCOMMODATION: Bunk Huts. Take linen or sleeping bag, blankets supplied. Gas cooking, refrigerator, hot showers, electric generator.
COST: $3 per day, per person.
FOOD & PETROL: Available at Licola Store.
ENQUIRIES: Transport, etc. Peter Carwardine 571 8958.
NOTE: If you were not at October meeting and will not be at December meeting and there is a possibility that you will join the excursion, please phone before the meeting.

ON THE GRAPEVINE

David & Joyce Holmes have been enjoying a four weeks collecting and sightseeing holiday on the northern coast of NSW. They travelled by caravan, first on the Newell Highway, then the New England Highway to Tenterfield, across on the Bruxner Highway, through Lismore to Ballina. After a couple of weeks there they travelled down to Port Macquarie, where they spent a week collecting before commencing the journey home, across the Oxley Highway. While in Ballina David enjoyed a visit to Grant & Barbara Miller's home just out of Lismore, to view Grant's collection. Having viewed Grant's collection, David says "with a good series of all the rarer species, and quite a few specimens of all the new species that have only recently been described, all beautifully mounted, it was an unforgettable experience".

Mali Malipatil spent a week in Darwin recently assisting with the setting up of a research project on insects associated with cashews at Wildman River (180 km SE of Darwin), collecting some bugs in Kakadu NP and Darwin area, and also catching up with his colleagues at the Northern Territory Museum and the Department of Primary Industries.

During November Kelvyn Dunn visited the ANIC at Canberra. The Tasmanian butterflies in the newly donated collection of the late L.E. Couchman of Hobart was examined for the endangered species project with Prof. Roger Kitching of Griffith University.



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The Society welcomes contributions of articles, papers or notes pertaining to any aspect of entomology for publication in this Bulletin. Contributions are not restricted to members but are invited from all who have an interest. Material submitted should be responsible and original. Statements and opinions expressed are the responsibility of the respective authors and do not necessarily reflect the policies of the Society.

Contributions may be typed on A4 paper or *preferably* sent on an **IBM formatted disk in *WordPerfect*** or other word processing package (clearly specified) with an enclosed hard copy print out. Urgent submissions may be faxed.

The deadline for each issue is the final Friday of each odd month.

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DIARY OF COMING EVENTS

11 December - Members Night
Members to bring exhibits for discussion

19 February - General Meeting
Mt Piper Report

19 March - Council Meeting

Scientific names contained in this document are *not* intended for permanent scientific record, and are not published for the purposes of nomenclature within the meaning of the *International Code of Zoological Nomenclature*, Article 8(b). Contributions are not refereed, and authors alone are responsible for the views expressed.

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